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Bioethanol used as topical antiseptics: Pretreatment optimization of bioethanol production from tobacco industrial waste (Article) (Open Access)

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Abstract

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Bioethanol can be used for biosolvents and antiseptics material in the pharmaceutical industry. With the abundance of tobacco production in Jember, East Java, Indonesia, tobacco stalks become a promising biomass raw material for bioethanol. The purpose of this study was to determine the effect of temperature on the pretreatment process of bioethanol production. Settings and Design of this study using Conventional pretreatment with batch system. The materials used in this study include industrial tobacco waste, HCl, H2SO4, aquadest, filter paper, and aluminum foil. The pretreatment method used is chemical methods. The effect of pretreatment temperature was analyzed on the pretreatment process for the optimization of bioethanol production. Statistical analysis used a percentage frequency distribution. The test results of cellulose with H2SO4 solvents are 6.99 % at temperature 100 °C, 6.60 % at temperature 120 °C, and 4.47 % at temperature 140 °C. The test results of cellulose with HCl solvents are 6.00 % at temperature 100 °C, 6.23 % at temperature 120 °C, and 5.66 % at temperature 140 °C. Conclusions of this study, the optimum temperature in the pretreatment process with H2SO4 for the temperature range 100 °C to 140 °C is 100 °C, with the cellulose content produced as much as 6.99 %. The optimum temperature in the pretreatment process with HCl for the temperature range 100 °C to 140 °C is 120 °C, with the cellulose content produced as much as 6.23 %.

SciVal Topic Prominence

Topic: Saccharification | Delignification | Ethanol Production

Prominence percentile: 99.902

Author keywords

2nd generation bioethanol | Pretreatment process of bioethanol | Tobacco stalks | Waste to pharmaceutical | Zero waste

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